

Title (en)

PROCESS FOR PRODUCING PROPANAL FROM METHANOL AND SYNGAS USING HETEROGENEOUS CATALYSTS

Title (de)

VERFAHREN ZUR HERSTELLUNG VON PROPANAL AUS METHANOL UND SYNTHESYGAS UNTER VERWENDUNG HETEROGENER KATALYSATOREN

Title (fr)

PROCÉDÉ DE PRODUCTION DE PROPANAL À PARTIR DE MÉTHANOL ET GAZ DE SYNTHÈSE UTILISANT DES CATALYSEURS HÉTÉROGÈNES

Publication

EP 4052789 A1 20220907 (EN)

Application

EP 21159856 A 20210301

Priority

EP 21159856 A 20210301

Abstract (en)

The present invention relates to processes for the selective production of propanal from methanol, carbon monoxide and hydrogen, using heterogeneous catalysts comprising one or more transition metals selected from Co, Ni, Cu, Fe, Mn, Mo, W, Ru, Re, Rh, and carbon, exhibiting a structure selected from graphitic, carbidic, aromatic or amorphous non-graphitizing.

IPC 8 full level

B01J 23/75 (2006.01); **B01J 27/20** (2006.01); **C07C 45/49** (2006.01); **C07C 47/02** (2006.01)

CPC (source: EP)

B01J 21/18 (2013.01); **B01J 23/70** (2013.01); **B01J 23/745** (2013.01); **B01J 23/75** (2013.01); **B01J 23/755** (2013.01); **B01J 23/8892** (2013.01); **B01J 35/393** (2024.01); **B01J 37/0045** (2013.01); **B01J 37/086** (2013.01); **C07C 45/49** (2013.01)

Citation (applicant)

- EP 3092211 A1 20161116 - FRAUNHOFER GES FORSCHUNG [DE]
- WO 2014170223 A1 20141023 - EVONIK INDUSTRIES AG [DE], et al
- EP 2020074523 W 20200903
- EP 2020074527 W 20200903
- EP 2020074536 W 20200903
- JENS KLABUNDECHRIS BISCHOFFANTHONY J. PAPA: "Propanols. In: Ullmann's Encyclopedia of Industrial Chemistry.", 25 May 2018, WILEY-VCH VERLAG GMBH & CO. KGAA., pages: 5
- KOICHI NAGAITOSHIKI UL: "Basic Chemicals Research Laboratory: R&D Report", 2004, SUMITOMO CHEMICAL CO., LTD., article "SUMITOMO KAGAKU", pages: 11
- C. D. HURDR. N. MEINERT, PROPIONALDEHYDE IN: ORGANIC SYNTHESSES, vol. 12, 1932, pages 64
- COLL., vol. 2, 1943, pages 541
- P. SABATIERJ.-B. SANDERENS: "Dedoublement catalytique des alcools par les metaux divises: alcools primaires formeniques", COMPT. REND. HEBD., vol. 136, 1903, pages 921
- P. SABATIERJ.-B. SANDERENS: "Nouvelles methodes generatees d'hydrogenation.", ANN. PHYS. CHIM., vol. 8, no. 4, 1905, pages 398, XP008026692
- WESTERHAUS, FELIX A. ET AL.: "Heterogenized cobalt oxide catalysts for nitroarene reduction by pyrolysis of molecularly defined complexes", NATURE CHEMISTRY, 2013, pages 538
- B. HASSEJ. GLASELA.M. KERND. YU. MURZINB.J.M. ETZOL, CATALYSIS TODAY, vol. 249, 1 July 2015 (2015-07-01), pages 30 - 37
- EDMOND LAMJOHN H. T. LUONG: "Carbon Materials as Catalyst Supports and Catalysts in the Transformation of Biomass to Fuels and Chemicals", ACS CATAL., vol. 4, 2014, pages 3393 - 3410, XP055657014, DOI: 10.1021/cs5008393
- P.W. ALBERS: "Neutron scattering study of the terminating protons in the basic structural units of non-graphitizing and graphitizing carbons", CARBON, vol. 109, 2016, pages 239 - 245
- PARKER ET AL.: "The effect of particle size, morphology and support on the formation of palladium hydride in commercial catalysts", CHEMICAL SCIENCE, vol. 10, 2019, pages 480
- F. ENDTERH. GEBAUER, OPTIK (OPTICS), vol. 13, 1956, pages 97
- K. SEIBOLDM. VOLL: "Distribution function for describing the particle size distribution of Soot and pyrogenic oxides", CHEMIKER-ZEITUNG, vol. 102, no. 4, 1978, pages 131 - 135

Citation (search report)

- [A] US 4361707 A 19821130 - HABIB MOHAMMAD M, et al
- [L] WO 2021043858 A1 20210311 - EVONIK OPERATIONS GMBH [DE]

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

DOCDB simple family (publication)

EP 4052789 A1 20220907; BR 112023017398 A2 20231003; CN 116963832 A 20231027; EP 4301511 A1 20240110; WO 2022184493 A1 20220909

DOCDB simple family (application)

EP 21159856 A 20210301; BR 112023017398 A 20220222; CN 202280018452 A 20220222; EP 2022054319 W 20220222; EP 22707118 A 20220222